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CASE REPORT

Abdominal Angina and Intestinal Gangrene-Catastrophic Presentation of Thrombosis of Common Hepato-Spleno-Mesenteric Trunk (HSMT): A Rare Case Report

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ABSTRACT

Middle age patient was presented in emergency department with complains of acute abdominal pain, vomiting and diarrhea. On clinical examination there was board like rigidity and tender abdomen. Initial labs were unremarkable. Filling defect was seen in an anomalous channel, hepato-spleno-mesenteric trunk that was seen as a supply of liver, spleen, small bowel and part of large bowel on contrast enhanced computed tomography. The left gastric artery was seen arising separately from aorta. Emergency exploratory laprotomy was done. Patchy discoloration and cyanosis with friability was seen in liver and spleen representing ischemia. Gangrene of small bowel and proximal large bowel (till the splenic flexure) was seen. The patient expired few days after presentation. No other surgical intervention was done.

This was an unusual case of abdominal angina due to thrombosis of a rare arterial variation of gastrointestinal vascularity. The hepato-spleno-mesenteric trunk was seen thrombosed which happens to be the only artery supplying the midgut and its embryological visceral derivatives in the subjects it occur in. However, in cases like these there is a possibility of collateral supply from esophageal, phrenic and inferior mesenteric arteries.

Keywords: Thrombosis, hepato-spleno-mesentric trunk, abdominal agina.

INTRODUCTION

Splanchnic embryology describes the variations of the celiac and mesenteric arteries which are thought to arise due to anomalous development of the ventral splanchnic arteries.[1] The celiac trunk and superior mesenteric arteries are the main supply of midgut and foregut. These vessels supply the stomach, small bowel and the large bowel till the distal two thirds of transverse colon, liver and spleen. These are the anterior branches of abdominal aorta given off at the 12^{th} thoracic and 1^{st} lumbar vertebral levels respectively. Anomalous anastamosis of the precursors of the adult arterial derivatives supplying the gastrointestinal tract, spleen and liver result in the vascular variations of the ventral branches of the abdominal aorta.[2,3]

On gastrointestinal imaging, arterial variations are commonly encountered; however, the hepato-spleno-mesenteric trunk is a rare occurrence accounting for less than 1% of all abdominal vascular anomalies.

CASE REPORT

A 35-years-old young man arrived at the emergency department of Jinnah post graduate medical Centre with lower abdominal pain and guarding on palpation. Liver was normal on percussion however there were diminished gut sounds on auscultation. Two days after the onset of symptoms, the pain became more severe, and progressed into a picture of acute abdomen and intestinal obstruction. Laboratory analyses demonstrated slightly raised amylase and severe metabolic acidosis. Subsequent labs revealed markedly raised D-dimers. No abnormality was identified in chest and abdominal X-rays.

On contrast enhanced CT scan abdomen (Fig 1 to 4) the celiac trunk and the superior mesenteric arteries were seen arising from a common arterial trunk, the hepato-spleno-mesenteric trunk which showed a filling defect representing thrombus at its origin causing significant (> 50%) luminal occlusion. The left gastric artery was seen separately arising from the abdominal aorta. Apart from thrombus there were peripheral wedge shaped areas involving segment VI of liver, infarcted spleen and a small right renal infarct. Patchy ischemia of liver, spleen and discoloration of the walls of stomach, small bowel and parts of large bowel was seen on exploratory laprotomy. These manifestations were not salvageable surgically so no

further surgical intervention was done. The patient expired the following day.

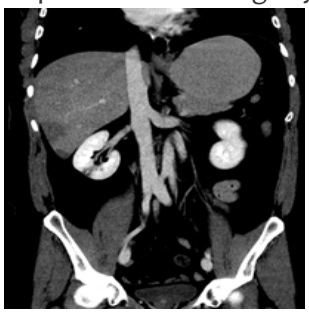

Fig: 1 CT Coronal View: Small infarcts

Fig: 2 CT Axial View: Infarctions in spleen

Fig: 3: Axial View: Thrombus in origin of

Fig: 4: Sagittal View: Thrombus in common origin of celiacomesenteric trunk

DISCUSSION

The upper gastrointestinal tract derives its major arterial supply from the celiac trunk and the superior mesenteric artery. The celiac trunk is the first anterior branch of the abdominal aorta. It is given off at 12th thoracic vertebral level and terminates almost immediately into the common hepatic, splenic and the left gastric artery.

At 1st lumbar vertebral level the superior mesenteric artery arises as the 2nd anterior branch of abdominal aorta. It supplies the small bowel from second part of duodenum till the right half of transverse colon making a watershed area with the inferior mesenteric artery at splenic flexure supplying the rest of the large bowel.

Variations of the celiac and mesenteric arteries are thought to occur as a result of anomalous embryological development of the ventral splanchnic arteries.

The omphalomesenteric artery is a precursor of developing blood supply of the fetal alimentary canal. It consists of four roots; the first and the fourth roots being joined by "longitudinal anastomosis."[3] The anastamosing vessel remnant of the first root gives rise to the celiac trunk : the origin of common hepatic artery, splenic artery and the left gastric artery. Disjunction of the fourth root results in the separate origin of superior mesenteric artery.

A hepato-spleno-mesenteric trunk is believed to be formed by the anomalous separation of this "longitudinal anastamosis" which implies that the origin of left gastric artery will be from the first omphalomesenteric root while the common hepatic, splenic and superior mesenteric roots will be derived from a common trunk derived from the fourth root remnant arising from the abdominal aorta.[4]

Hepato-spleno-mesenteric trunk (HSMT) classified as type 3 according to Mischel or Adachi classification. The incidence of HSMT has been found in various frequencies in other reports available in literature: 1.2% by Adachi (1928)[5]; 0.5% by Bergman and al.[6]; 0.68% by Song.[7] 0.7% by Chen at al.[8]

Vascular variations are benign and usually do not produce symptoms. However, prior to a transcatheter intervention, angiography for intrabdominal bleeding or as in this case thrombosis and resulting infarction, awareness of their presence in anticipation is of immense importance.

Prior knowledge of this anomaly is pivotal for interventional or therapeutic approach for surgical, oncologic, or radiological procedures especially before pancreaticoduodenectomy or lymphadenectomy in this area to avoid undesired outcomes like iatrogenic injuries. The precise knowledge of the arterial variations is very important when solid organ transplant like liver transplant is under consideration, as iatrogenic vascular damage would result in grave outcomes.[5]

This hepato-spleno-mesenteric trunk is associated with aneurysm, chronic occlusive disease but infarction of gastrointestinal tract and major viscera is a very rare occurrence with only few cases previously reported.

The thrombosis of hepato-spleno-mesenteric trunk in this case proved to be fatal for the patient resulting in complete "cut off" of the major arterial supply of small bowel, part of large bowel and vital organs like liver and spleen. The consequences of ischemia in our case were beyond recovery through medical or surgical intervention.

REFERENCES

1. Varma KS, Pamidi N, Vollala VR. Common celiacomesenteric trunk: a rare anatomic variation.a case report. J Vasc Bras 2009; 8:271-3.
2. Saeed M, Murshid, KR., Rufai, AA. Elsayed SE, Sadiq MS. Coexistence of multiple anomalies in the celiacmesenteric arterial system. Clin Anat 2003; 16:30–6.
3. Van Damme, JP, Bonte, J. in: Vascular anatomy in abdominal surgery. Thieme New York; 1989:7–16.
4. Geboes K, Geboes KP, Maleux G. Vascular anatomy of

the gastrointestinal tract. Best Pract Res Clin Gastroenterol 2001; 15: 1-14.

5. Adachi B. Das Arteriensystem der Japaner. Vol . - 2. Verlag der Kaiserlich- Japanischen Universitat zu Kyoto1928, Japan.
6. Bergman RA, Afifi AK, Miyauchi R. Celiak trunk arteries. Illustrated encyclopedia of human anatomic variation. Opus II: cardiovascular system: arteries: abdomen[http://www.Anatomyatlases.org/AnatomicVariants/Cardiovascular/Text/Arteries/CeliacTrunk.shtml]. 2007.
7. Song SY, Chung JË, Yin YH, Jae HJ, Kim HC, Jeon UB, et al. liac axis and common hepatic artery variations in 5002 patients: systematic analysis ëith spiral CT and DSA. Radiology 2010; 255,278– 88.
8. Chen H, Yano R, Emura S, Shoumura S. Anatomic variation of the celiac trunk with special reference to hepatic artery patterns. Ann Anat 2009; 191:399– 407.